The invention in which an exclusive right is claimed is defined by the following:

1. Apparatus for display of an image, in regard to a limited region of interest, comprising:

a) a light source which emits light;

(b) a substrate that serves as a support;

(c) a cantilever comprising a fixed end and a free end, the fixed end remaining fixed to the substrate and the free end extending freely relative to the substrate, enabling the free end to move in the limited region of interest to scan light onto an image plane to create an image;

(d) an actuator disposed adjacent to the cantilever and being employed for deflecting the cantilever so as to move the free end in a desired motion, and

(e) a position sensor employed for detecting a position of the free end of the cantilever, for producing a signal used in controlling the actuator to cause the cantilever to move in the desired motion.

2. The apparatus of Claim 1, wherein the apparatus has at least two dimensions smaller than three millimeters.

3. The apparatus of Claim 1, wherein the light source provides the light using at least one of a diode, a laser, and an optical fiber.

4. The apparatus of Claim 1, wherein the light source is one of:

(a) end-butted to the fixed end of the cantilever; and

(b) attached adjacent to the free end of the cantilever.

5. The apparatus of Claim 1, wherein the cantilever comprises at least one of a silicon oxide, a silicon nitride, a glass, a polymer, a photoresist, and an epoxy resin.

6. The apparatus of Claim 1, wherein the cantilever is tapered in at least one dimension such that the fixed end is larger than the free end in said at least one dimension.

7. The apparatus of Claim 1, wherein a dimension of the cantilever varies from the fixed end to the free end to determine vibrational characteristics of the cantilever.

8. The apparatus of Claim 1, wherein the cantilever is formed by at least one of a deep reactive ion etching, a photolithography, an e-beam lithography and a wet anisotropic etching of the substrate using a mask to define a shape of the cantilever.

9. The apparatus of Claim 1, wherein the cantilever comprises one of:

(a) an emitting waveguide that receives the light at the fixed end and directs the light received to the free end, where the light is emitted for display illumination; and

(b) a flexible member that supports the light source at the free end.

10. The apparatus of Claim 1, wherein the cantilever is one of:

(a) deflected into a resonant motion in at least one of two directions;

(b) deflected into a non resonant motion in at least one of the two directions;

(c) deflected into two-dimensional circular motion using a single actuator;

(d) deflected into two-dimensional rocking linear motion using single actuator; and

(e) deflected so as to selectively move the free end to a desired position.

11. The apparatus of Claim 1, wherein the actuator comprises one of an electrostatic force actuator, a piezoelectric actuator, and an electromagnetic actuator.

12. The apparatus of Claim 1, wherein the actuator comprises at least one of:

(a) an actuator for deflecting the cantilever in a vertical direction relative to a primary plane of the substrate; and

(b) an actuator for deflecting the cantilever in a horizontal direction relative to the primary plane of the substrate.

13. The apparatus of Claim 1, wherein the actuator is attached to at least one of:

(a) the cantilever; and

(b) the substrate.

14. The apparatus of Claim 1, wherein the position sensor comprises one of:

(a) the actuator;

(b) a piezoelectric transducer;

(c) a capacitive displacement transducer;

(d) a piezoresistive sensor

(e) a light source and detector pair

(f) a photodetector array

(g) a magnetic sensor

(h) a fiber bundle displacement sensor;

(i) an interferometer; and

(j) an inductive displacement transducer.

15. The apparatus of Claim 1, further comprising a lens disposed at the free end of the cantilever through which the light conveyed through the cantilever passes.

16. The apparatus of Claim 15, wherein the lens comprises one of a focusing lens, a refractive lens, and a diffractive lens.

17. The apparatus of Claim 15, wherein the free end of the cantilever comprises a gradient index lens.

18. The apparatus of Claim 1, wherein the light source comprises:

(a) a white light source; and

(b) a tunable color filter to provide precise color spectrum of light, the tunable color filter comprising one of:

(i) an optical resonant cavity;

(ii) a grating; and

(iii) a prism.

19. The apparatus of Claim 1, wherein the light source comprises a plurality of color elements, each of the plurality of color elements producing a different color light.

20. Apparatus for use either for a far-field image acquisition or for a display of an image, in regard to a limited region of interest, comprising:

(a) a light source which emits light;

(b) a substrate that serves as a support;

(c) a cantilever comprising a fixed end and a free end, the fixed end remaining fixed to the substrate upon which the cantilever was originally formed and the free end extending freely beyond where the substrate has been removed from supporting the cantilever, enabling the free end to move relative to the substrate in the limited region of interest;

(d) an actuator disposed adjacent to the cantilever, the actuator being employed for deflecting the cantilever so as to move the free end in a desired motion, and

(e) a position sensor employed for detecting a position of the free end of the cantilever, for producing a signal used in controlling the actuator to cause the cantilever to move in the desired motion.

21. The apparatus of Claim 20, wherein the apparatus has at least two dimensions smaller than three millimeters.

22. The apparatus of Claim 20, wherein the light source provides the light using at least one of a diode, a laser, and an optical fiber

23. The apparatus of Claim 20, wherein the light source is one of:

(a) end-butted to the fixed end of the cantilever; and

(b) attached adjacent to the free end of the cantilever.

24. The apparatus of Claim 20, wherein the cantilever comprises at least one of a silicon oxide, a silicon nitride, a glass, a polymer, a photoresist, and an epoxy resin.

25. The apparatus of Claim 20, wherein the cantilever is tapered in at least one dimension such that the fixed end is larger than the free end in said at least one dimension.

26. The apparatus of Claim 20, wherein a dimension of the cantilever varies from the fixed end to the free end to determine vibrational characteristics of the cantilever.

27. The apparatus of Claim 20, wherein the cantilever is formed by at least one of a deep reactive ion etching, a photolithography, an electron beam lithography, and a wet anisotropic etching of the substrate using a mask to define a shape of the cantilever.

28. The apparatus of Claim 20, wherein the cantilever comprises one of:

(a) an emitting waveguide that receives the light at the fixed end and directs the light received to the free end, where the light is emitted for illuminating the target;

(b) a receiving waveguide that receives light that is reflected from the target through the free end and directs the received light to the fixed end for detection by a photon detector; and

(c) a flexible member that supports the light source.

29. The apparatus of Claim 20, wherein the cantilever is one of:

(a) deflected into a resonant motion in at least one of two directions;

b) deflected into a non-resonant motion in at least one of the two directions

c) deflected into two dimensional circular motion using single actuator;

d) deflected into two dimensional rocking linear motion using single actuator; and

(e) deflected so as to selectively move the free end to a desired position.

30. The apparatus of Claim 20, wherein the actuator comprises one of an electrostatic force actuator, a piezoelectric actuator, and a magnetic actuator.

31. The apparatus of Claim 20, wherein the actuator comprises at least one of:

(a) an actuator for deflecting the cantilever in a vertical direction relative to a primary plane of the substrate; and

(b) an actuator for deflecting the cantilever in a horizontal direction relative to the primary plane of the substrate.

32. The apparatus of Claim 20, wherein the actuator is attached to at least one of:

(a) the cantilever; and

(b) the substrate.

33. The apparatus of Claim 20, wherein the position sensor comprises one of:

(a) the actuator;

(b) a piezoelectric transducer;

(c) a capacitive displacement transducer;

(d) a piezoresistive sensor

(e) a light source and detector pair

(f) a photodetector array;

(g) a magnetic sensor

(h) a fiber bundle displacement sensor;

(i) an interferometer; and

(j) an inductive displacement transducer.

34. The apparatus of Claim 20, further comprising a lens disposed at the free end of the cantilever through which the light conveyed through the cantilever passes.

35. The apparatus of Claim 34, wherein the lens comprises one of a focusing lens, a refractive lens, and a diffractive lens.

36. The apparatus of Claim 34, wherein the free end of the cantilever comprises a gradient index lens.

37. The apparatus of Claim 20, further comprising a photon detector detecting the emitted light that is reflected from the target.

38. The apparatus of Claim 37, wherein the photon detector is supported by one of the substrate and the cantilever, the photon detector detecting the emitted light that is reflected from the target.

39. The apparatus of Claim 37, wherein the photon detector is disposed at one of:

(a) adjacent to the free end of the cantilever, to detect light emitted from the free end of the cantilever that has been reflected from the target;

(b) adjacent to the fixed end of the cantilever, to detect light that has been received from the target at the free end of the cantilever and conveyed to the fixed end of the cantilever; and

(c) on the free end of the cantilever, to detect light emitted from the free end of the cantilever that has been reflected from the target.

40. The apparatus of Claim 20, further comprising a controller that causes the actuator to drive the free end of the cantilever in a pattern relative to the target, so as to do one of:

(a) display an image on the target; and

(b) acquire an image of the target.

41. The apparatus of Claim 20, further comprising at least one of:

(a) a tapered waveguide coupler optically coupling the light source to the cantilever; and

(b) an index-matching material optically coupling the light source to the cantilever.

42. The apparatus of Claim 20, further comprising a flexible sheath enclosing the light source, substrate, cantilever, actuator, and position sensor, so that the apparatus is usable as an endoscope.

43. A method for enabling either a far-field image acquisition or a display of an image, in regard to a limited region of interest, comprising the steps of:

(a) forming a cantilever on a substrate;

(b) removing a portion of the substrate underlying the cantilever;

(c) supporting the cantilever at a fixed end of the cantilever, the fixed end remaining fixed to the substrate, a free end of the cantilever extending freely beyond where the portion of the substrate was removed from supporting the cantilever, enabling the free end to move relative to a target in the limited region of interest;

(d) deflecting the cantilever so as to move the free end in a desired motion; and

(e) detecting a position of the free end of the cantilever, producing a signal indicative of the position for use in controlling the cantilever to move in the desired motion.

44. The method of Claim 43, wherein the cantilever has at least two dimensions that are smaller than one millimeter.

45. The method of Claim 43, further comprising one of the steps of:

(a) end-butting a light source to the fixed end of the cantilever; and

(b) attaching a light source adjacent to the free end of the cantilever.

46. The method of Claim 43, further comprising the step of tapering the cantilever in at least one dimension, such that the fixed end is larger than the free end in said at least one dimension.

47. The method of Claim 43, further comprising the step of forming the cantilever by at least one of a deep reactive ion etching and a wet anisotropic etching of the substrate using a mask to define a shape of the cantilever.

48. The method of Claim 43, further comprising at least one of the steps of:

(a) receiving light at the fixed end and direct the light received to the free end, said cantilever acting as a waveguide, said free end emitting light to illuminate the target;

(b) receiving light that is reflected from the target through the free end and directing the light that is received to the fixed end for detection by a photon detector; and

(c) supporting a light source at the free end, said light source emitting light that illuminates the target.

49. The method of Claim 43, wherein the step of deflecting comprises one of the steps of:

(a) deflecting the cantilever into a resonant motion in at least one of two orthogonal directions; and

(b) deflecting the cantilever so as to selectively move the free end to a desired position.

50. The method of Claim 43, where the step of deflecting comprises at least one of the steps of:

(a) deflecting the cantilever in a vertical direction relative to a primary plane of the substrate; and

(b) deflecting the cantilever in a horizontal direction relative to the primary plane of the substrate.

51. The method of Claim 43, wherein the step of sensing the position of the cantilever is done with one of:

(a) an actuator, when the actuator is not being employed for driving the cantilever to move in the desired motion;

(b) a piezoelectric transducer;

(c) a capacitive displacement transducer;

(d) a piezoresistive sensor

(e) a light source and detector pair

(e) photodetector array

(f) magnetic sensor

(g) a fiber bundle displacement sensor;

(h) an interferometer; and

(j) an inductive displacement transducer.

52. The method of Claim 43, further comprising the step of focusing light transmitted through the free end of the cantilever.

53. The method of Claim 52, wherein the step of focusing light is done with one of:

(a) a refractive lens;

(b) a diffractive lens; and

(c) a gradient index lens formed at the free end of the cantilever.

54. The method of Claim 43, further comprising the step of detecting light that is reflected from the target.

55. The method of Claim54, wherein the step of detecting the light is carried out with one of:

(a) a light sensor that is disposed adjacent to the free end of the cantilever, to detect light emitted from the free end of the cantilever that is reflected from the target; and

(b) a light sensor that is disposed adjacent to the fixed end of the cantilever, to detect light that has been received from the target at the free end of the cantilever and conveyed to the fixed end of the cantilever.

56. The method of Claim 43, where in the step of deflecting the cantilever comprises the step of driving the free end of the cantilever to move in a pattern relative to the target so as to do one of the steps of:

(a) displaying an image on the target; and

(b) acquiring an image of the target.

57. The method of Claim 43, further comprising at least one of the steps of:

(a) coupling a light source to the fixed end of the cantilever through a tapered waveguide coupler; and

(b) coupling a light source to the fixed end of the cantilever with an index-matching material.

58. The method of Claim 43, further comprising the step of enclosing at least the substrate and the cantilever in a flexible sheath to function as an endoscope.